REMARKS

The Examiner is thanked for the thorough examination of the present application and the withdrawal of the previous rejection. The Office, however, continues to reject all claims 1, 2, and 6-11 and 14-19 under 35 U.S.C. § 103(a) as allegedly obvious over the combination of U.S. patent 6,399,277 to NOJIMA in view of U.S. patent 6,306,555 to Schulta. All claims remain pending, and for at least the following reasons, Applicant respectfully request reconsideration and withdrawal of the rejection.

Response to Rejections Under 35 U.S.C. 103 (a)

The Office Action rejected claims 1, 2, 6-11, and 14-19 under 35 U.S.C. 103 (a) as allegedly unpataentable over Nojima (US 6,399,277) in view of Schulta (US 6,306,555).

Claim 1 defines:

> 1. A negative photoresist composition with multi-reaction systems, comprising the following components as a uniform solution in an organic solvent:
>
> at least one unsaturated resin having a molecular weight in the range from 5,000 to 250,000 and an acid value between 50 and 250mgKOH/g, selected from the group consisting of homopolymers, copolymers, and combinations thereof, which the homopolymers and the copolymers are synthesized by at least one monomer selected from the group consisting of styrene, methyl styrene, acrylic acid, acrylate, methyl lacrylic acid, methyl acrylate, vinyl ether, and combinations thereof;
>
> at least one photoinitiator in an amount of 0.1 to 35 parts by weight, based on 100 parts by weight of the unsaturated resin;
>
> at least one free radical reactive monomer in an amount of 0.1 to 100 parts by weight;
>
> ***at least one photoacid generator*** in an amount of 0.1 to 35 parts by weight, ***wherein the photoacid generator is triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, trimethyl triphenyl triflate or combinations thereof;*** and
>
> at least one cation reactive monomer in an amount of 0.1 to 35 parts by weight.

(*Emphasis added.*) Claim 1 patently defines over the cited art for at least the reason that the cited art fails to disclose at least the features emphasized above.

The claimed negative photoresist composition is used to form a **removable photoresist**. **Due to the specific photoacid generator of the claimed embodiments, the negative photoresist composition undergoes a cross-link reaction to simultaneously polymerize free-radicals and cations in the UV photolithography process.** Namely, the photoinitiator and the photoacid generator **work simultaneously** when exposing to an actinic ray or radiation. Therefore, **free-radical polymerization and cation polymerization are performed simultaneously.**

In the present application, due to the specific photoacid generator (triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, and trimethyl triphenyl triflate), the composition perform free-radical polymerizations and cation polymerizations respectively in the same **UV photolithography process.** This means the **specific photoacid generator** reacts with the cation reactive monomer when exposing to an actinic ray or radiation.

The Office Action alleges that Nojima lacks a working example with a photoacid generator, and Schultz discloses the functional equivalence of the triflate onium salts to the disclosed hexafluoroantimonate anions of Nojima. The Office Action then concludes that it would have been *prima facie* obvious to one of ordinary skill in the art of photopolymeriazble thermosetting composition to insert a triphenylsulfonium triflate in for the triphenylsulfonium hexafluoroantimonate for the setting-adhesion imparting agent of dicyandiamide. Applicant respectfully disagrees.

In order to establish a *prima facie* case of obviousness, **three criteria must be met**. First, **there must be some suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teaching. Second, **there must be a reasonable expectation of success**, according to MPEP 2142. Applicant submits that the Office Action has failed to satisfy these criteria in asserting that the rejected claim is obvious in view of Nojima combined with the Schultz.

Nojima discloses a photopolymerizable **thermosetting** resin composition for forming a solid resist used in PCB (printed circuit board), and in general the solid resist **would not apt to be removed after forming**. However, neither Schultz nor this invention relate to a photopolymerizable **thermosetting** resin composition. Therefore, Schultz's patent does not teach methods which solve the same problems as the Nojima. Thus, there is no **suggestion or motivation**, either in the references themselves or in knowledge generally available to one of ordinary skill in the art, to modify the references or combine reference teachings.

In addition, "the teaching or suggestion to make the claimed combination must both be found in the prior art, and not in Applicant's disclosure." MPEP 2143 *citing In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Applicant submits that motivation to combine Nojima et al. with Schultz's patent is provided by the Applicant's disclosure, and not by the prior art. "The mere fact that it is possible to find two isolated disclosures that might be combined in such a way to produce a new compound does not necessarily render such production obvious unless the art also contain something to suggest the desirability of the proposed combination. In the absence of such a reference suggestion, there is inadequate support for the position that the

required modification would prima facie have been obvious." *In re Grabiak*, 226 U.S.P.Q. 870 (Fed. Cir. 1985).

Nojima discloses a photopolymerizable **thermosetting** resin composition. It should be noted that, in order to performing the follow-up thermosetting process, the setting adhesion-imparting initiator must be still remained without activation when exposing to an active energy ray. It means that setting adhesion-imparting initiator (as disclosed by Nojima) would not be activated to react with cation reactive monomer (epoxide) even though exposed to an active energy ray. Since the triaryl sulfonium hexafluorophosphate loses activity after exposing to an active energy ray, why those skilled in the art would have suggestion or motivation for using it to serve as a setting adhesion-imparting initiator?

Furthermore, even given suggestions and motivations to combine the two references, those skilled in the art would obtain a **thermosetting resin composition** and use it for forming a solid resist used in PCB with Nojima's teaches, rather than obtaining a photoresist composition and use it according to the methods of the claimed embodiments.

In Nojima's patent, first the photopolymerizable **thermosetting** resin composition is coated on a substrate and exposed to an active energy ray to perform a free-radical polymerization. Next, the obtained coating is developed to form a resist pattern. Finally, the resist pattern is subjected to a thermosetting process to perform a cation polymerization.

Accordingly, those skilled in the art would not readily know that the resulted composition can be used as a negative photoresist composition in photolithography processes employing UV light to produce radical polymerization and cationic polymerization **simultaneously without any thermosetting**. Moreover, those skilled in the art would not readily know know that the

resulted photoresist composition can be used to control light reaction efficiency and increase reaction thoroughness, thus obtaining a high resolution pattern.

For at least the reasons stated above, independent claim 1 is allowable over the combination of Nojima and Schulta.

As a separate and independent basis for the patentability of all claims, Applicant respectfully traverses the rejections as failing to identify a proper basis for combining the cited references. In combining these references, the Office Action stated only that the combination would have been obvious "for the setting-adhesion imparting agent of dicyandiamide with the reasonable expectation of same or similar results for excellent properties for a solder resist like soldering resistance, solvent resistance, and chemical resistance." (Office Action, page 3). This alleged motivation is clearly improper in view of well-established Federal Circuit precedent.

It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc., 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

> "The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ..." Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(*Emphasis added.*) In re Dow Chemical Company, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicant notes that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest both the combination of elements and the structure resulting from the combination. Stiftung v. Renishaw PLC, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements to derive a negative photoresist composition, as claimed by the Applicant.

When an obviousness determination is based on multiple prior art references, there must be a showing of some "teaching, suggestion, or reason" to combine the references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the "absence of such a suggestion to combine is dispositive in an obviousness determination").

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be "clear and particular." Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

If there was no motivation or suggestion to combine selective teachings from multiple prior art references, one of ordinary skill in the art would not have viewed the present invention as obvious. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998);

Gambro Lundia AB, 110 F.3d at 1579, 42 USPQ2d at 1383 ("The absence of such a suggestion to combine is dispositive in an obviousness determination.").

Significantly, where there is no apparent disadvantage present in a particular prior art reference, then generally there can be no motivation to combine the teaching of another reference with the particular prior art reference. Winner Int'l Royalty Corp. v. Wang, No 98-1553 (Fed. Cir. January 27, 2000). The rationales relied on by the Office Action in the present application are merely generic statements, that have nothing to do specifically with the structures disclosed in the other references. As such, these rationales cannot be properly viewed as proper motivations for combining the specific teachings of the individual references. Indeed, the generic motivations advanced by the present Office Action could be used to support a combination of ANY references, which is clearly contra to the cited Federal Circuit precedent and the clear intent of 35 U.S.C. § 103.

For at least the additional reason that the Office Action failed to identify proper motivations or suggestions for combining the various references to properly support the rejections under 35 U.S.C. § 103, those rejections should be withdrawn.

Cited Art

The cited art made of record, but not relied upon, has been considered but is not believed to impact the patentability of the pending claims.

Should the Examiner believe that a teleconference would be helpful to expedite the examination of this application, the Examiner is invited to contact the undersigned.

No fee is believed to be due in connection with this amendment and response. If, however, any fee is deemed to be payable, you are hereby authorized to charge any such fee to Deposit Account No. 20-0778.

Respectfully submitted,

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